INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE ONE YEAR REVIEW MEETING ON A REVISED ATS ROUTE STRUCTURE – ASIA TO MIDDLE EAST/EUROPE, SOUTH OF THE HIMALAYAS (EMARSSH OYR)

BANGKOK, THAILAND, 12 TO 16 JANUARY 2004

The views expressed in this Report should be taken as those of the Task Force and not of the Organization.

Adopted by the Task Force
and published by the ICAO Asia and Pacific Office

TABLE OF CONTENTS

PART I - HISTORY OF THE MEETING

PART II - REPORT ON AGENDA ITEMS

APPENDICES

PART I – HISTORY OF THE MEETING

1. **Introduction**

1.1 The One Year Review Meeting on a revised ATS route structure – Asia to Middle East/Europe, South of the Himalayas (EMARSSH OYR) was held at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 12 to 16 January 2004.

2. **Attendance**

2.1 The meeting was attended by 29 participants from 11 States, 2 International Organizations (IATA and IFATCA). A list of participants is at **Appendix A** to this report.

3. **Officers and Secretariat**

3.1 Mr. Ron Rigney, Operations Manager, Airservices Australia acted as Chairman of the meeting. Mr. David Moores, Regional Officer Air Traffic Management, ICAO Asia and Pacific Regional Office, Bangkok served as the Secretary for the meeting.

4. **Opening of the Meeting**

4.1 Mr. David Moores opened the meeting on behalf of Mr. L.B. Shah, Regional Director, ICAO Asia and Pacific Office, Bangkok. He welcomed participants to Bangkok to attend this last meeting of the EMARSSH Project. He expressed appreciation on behalf of ICAO for the excellent achievement of States, international organizations and industry partners involved for the implementation of one of the most ambitious airspace restructuring projects ever undertaken by ICAO and its partners. The revised ATS route restructure which links Australia, Asia, the Middle East and Europe introduced parallel routes spaced at 50 NM using RNP 10, and has led to significant benefits in operational efficiency, fuel savings, environmental considerations and enhanced safety. The project has received widespread acclaim by the aviation industry and stands as an example of international cooperation at the highest level. This is the last meeting to be held in this conference room and on Thursday, participants will be able to join in the opening ceremony of the new conference building generously donated by the Royal Thailand Government to ICAO. This will mark a new beginning for the Asia and Pacific Regional Office to be able to serve this region with highly improved meeting and conference facilities.

4.2 Mr. Ron Rigney welcomed participants to the EMARSSH One Year Review Meeting and noted that with the inclusion of the special Core Team pre-implementation meeting held in Singapore during October 2002, the One Year Review meeting would be the 12th meeting of the EMARSSH Task Force. He highlighted that the purpose of the meeting was to undertake a one-year review of the implementation of the EMARSSH route structure since 28 November 2002, including a review of the operational and technical aspects of air traffic management and flight operations related to the route structure including further enhancements. The meeting would also be updated on the outcomes of several related meetings which had taken place over the last 12 months, with the most recent (the ICAO RVSM Special Coordination Meeting on India and Pakistan ATM and Transition Procedures (SCM/RVSM/IND-PAK)) having been completed during the period 7 – 9 January 2004.

4.3 Mr. Rigney reflected on the origins of the project, noting that IATA conceived the development of the revised route structure through its Joint Route Development Group (JRDG) meetings held during 2000. Realizing the scope and complexity of the project, ICAO was informed of IATA's initiative and requested to develop and coordinate the planning and implementation, through the involvement of States and international organizations. This request was endorsed by APANPIRG in 2000 and subsequently the EMARSSH Task Force was established, with the first meeting held in Brisbane, Australia during February

2001. He emphasized that the EMARSSH route structure would continue to be modified and enhanced as and when circumstances permitted. Although it was likely that a recommendation may go to APANPIRG to disband the ICAO EMARSSH Task Force following the one-year review meeting, it was expected that further improvements to the EMARSSH route structure would continue to be achieved through the newly established ICAO Route Review Task Force and other appropriate forums.

5. Documentation and Working Language

5.1 All discussions were conducted in English. Documentation was issued in English.

5.2 Seven Working Papers and one Information Paper were presented to the meeting. A list of papers is included at **Appendix B.**

PART II - REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda

1.1 The meeting reviewed the provisional agenda presented by the Secretariat, amended Agenda Item 2 to include the Action Plan, and adopted it as the agenda for the meeting:

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Review Action Plan and Route Structure

Agenda Item 3: Review Air Traffic Management and Operations

Agenda Item 4: Future enhancements

Agenda Item 5: Future Action

Agenda Item 6: Other Business

Agenda Item 2: Review Action Plan and Route Structure

2.1 The meeting reviewed the Action Plan of the EMARSSH Post Implementation Review Meeting (PIRM) held at the Gold Coast, Queensland, Australia on 31 March to 2 April 2003 and updated the items as follows:

1. Review the route description of L333 to include FL280

The minimum en-route level for L333 was lowered by India to FL300 as reported at the SCM/RVSM/IND-PAK meeting. In the Karachi FIR the MEA is being coordinated by Pakistan internally with the authorities, and when approved a NOTAM will be issued.

2. Establishing a new route linking ASOPO to RK

At the RVSM/TF/20 Meeting held at Delhi, India on 27-31 October 2003, the Airports Authority of India (AAI) announced that the segment ASOPO – VIKIT on P628 was approved for implementation. Pakistan advised at the SCM/RVSM/IND-PAK meeting that the segment VIKIT – Rahim Yar Khan (RK) was also approved, and coordination with India was completed and the route segment would be jointly implemented by NOTAM on 22 January 2004.

3. Create a procedure whereby a fixed mach number requirement is applied on a route

The meeting was informed that under the Air Traffic Flow Management Plan (ATFMP) being developed for the Bay of Bengal traffic flows transiting Afghanistan airspace by the Bay of Bengal ATS Coordination Group (BBACG), a fixed Mach number of M0.84 at and above FL280 on L759 had been implemented. Further information on the use of the MNT is provided under Agenda Item 3.

4. The development of a westbound flow management plan

The ATFMP for the Bay of Bengal and Beyond to the Afghanistan airspace was being developed by the BBACG. States concerned were implementing arrangements to improve the traffic flow and efficiency of air traffic operations.

5. Pursue additional flight levels in Kabul FIR

The meeting was advised that ICAO, IATA and other parties concerned had been coordinating with the Coalition Forces for some time to obtain FL280 for overflying international traffic in the Kabul FIR. It was anticipated that approval to use FL280 would be granted in the short term.

6. Investigate the capability of some flights climbing to FL350 before Kabul FIR

The meeting was informed that under the RVSM transition arrangements implemented by Pakistan for transition from RVSM to CVSM for flights transiting the Kabul FIR, traffic at FL300 and FL320 would transition to FL310, and traffic at FL340 and FL360 would transition to FL350. In applying the transition procedures, a flexible approach was being adopted and aircraft at lower levels would be cleared to FL350 as traffic permitted.

7. Pursuit of consistent application of proper MNT

This matter is considered under Agenda Item 3.

8. Follow-up implementation of BB17 and BB18 with States concerned

This matter is considered below.

2.2 The meeting agreed that appropriate follow-up action was being taken on the PIRM Action Plan and outstanding issues from this meeting would be referred to the appropriate ATS coordination group.

2.3 The meeting reviewed the route issues considered by the PIRM. Nepal updated the meeting on progress to implement the EMARSSH routes in the Katmandu FIR. Nepal reaffirmed their commitment to open Nepal's airspace to international civil aviation. The implementation of the EMARSSH Himalaya routes would reduce flight times and provide benefits to the operators. However to date, these routes have not been implemented. The meeting recognized and commended Nepal on their considerable effort to coordinate and implement these routes with neighbouring States. To progress implementation, further civil/military consultation was required by adjacent States. The meeting agreed that this matter should be given priority and brought to the attention of the BBACG and the APANPIRG Route Review Task Force, which was scheduled to hold its first meeting on 7-11 June 2004. Nepal provided details of the Himalaya routes to be implemented as shown in **Appendix C**.

2.4 The meeting recalled that Pakistan reported to the PIRM that further improvements could be achieved to the revised structure but would need further consultation with adjacent States as well as military authorities. These proposals included Himalaya 1, Pakistan 1, Pakistan 7 and restructuring of A466. In this regard the meeting agreed that this matter should be referred to the Route Review Task Force and BBACG.

2.5 Thailand recalled that at the PIRM they had raised problems of aircraft not being able to operate below the Bay of Bengal RNP 10 airspace due to the conventional ATS routes over the Bay of Bengal having been withdrawn when the EMARSSH route structure was implemented. Also it was not possible to use FL260 for traffic departing from Southeast Asia airports and this restricted ATC flexibility in making use of available airspace. To pursue this matter further, Thailand would submit a paper to the BBACG/14 meeting (2-6 February 2004) for consideration.

2.6 IATA reminded the meeting that the parallel route structure in the northern part of the Bay of Bengal airspace could not be fully implemented in accordance with the EMARSSH plan. This had resulted in four of the parallel routes converging into two and creating traffic congestion over northern India especially in the Delhi area. The problem was further complicated by the Afghanistan airspace situation whereby, flight level and route restrictions reduced airspace capacity and RVSM was not being implemented. IATA highly appreciated the work undertaken by India and Pakistan and the cooperation received by their military authorities to achieve the implementation of the extension to P628 from ASOPO direct RK with effect from 22 January 2004. In addition, the meeting was advised that to gain maximum benefit from the opening of this route, the segment RK direct Kandahar should be implemented as a matter of priority. Without this segment, traffic would be required to take the longer routing via G452 – B466 – V390. ICAO was requested to initiate action to implement this route improvement. Also, the matter would referred to the BBACG/14 meeting and to the Route Review Task Force. IATA estimated that approximately 30 percent of traffic using L759/L750 would route via P628/V390, thus relieving traffic congestion in the Delhi area.

2.7 In addition to the above, IATA requested that implementation of the following route segments be pursued:

a) PRA – SERKA – SOKAM
b) GASIR – BIRJAND
c) NH – ZAHEDAN

The meeting agreed to refer this matter to the Route Review Task Force and BBACG.

Agenda Item 3: Review Air Traffic Management and Operations

3.1 IATA noted the considerable benefits provided by the EMARSSH routes, however, notwithstanding the substantial benefits which have been realized thus far, further improvements and enhancements in procedures and routes were still required to realize the full benefits of the project. The meeting noted that considerable discussion and effort was being made by other meetings such as the RVSM/TF and BBACG to address the route and airspace restrictions affecting the traffic flow across the Bay of Bengal and Kabul FIR. The issues involved were well documented and priority was being given to progress the matter. In addition, IATA drew attention to the expected traffic flow adjustments that would arise from the implementation of the ASOPO to RK extension. In this regard, the traffic flow at SAMAR and TIGER should be continued to be monitored and reported to the RVSM/TF/21 90-day Review Meeting (8-12 March 2004).

3.2 The meeting noted information provided by IATA regarding the lack of progress being made by Myanmar to improve its air-ground communications. The meeting recalled this was a long standing problem and the lack of reliable VHF provided by Myanmar was recorded by APANPIRG as a deficiency. The meeting expressed concern that improvements were urgently required especially with RVSM having been implemented in the Yangon FIR on 28 November 2003. The RVSM/TF 90-day Review Meeting would take this matter into consideration. Also, the meeting was informed that the ICAO Asia and Pacific Office continued to press Myanmar to instigate remedial action as a matter of urgency. Recognizing that six EMARSSH routes pass through the Yangon FIR, RVSM operations were being conducted and the safety

concerns arising from the poor ATS communications, the meeting urged ICAO to continue its effort to impress upon Myanmar the importance of making immediate improvements to their communication infrastructure.

3.3 India informed the meeting that ADS and CPDLC was now operational at the Kolkata ACC for the Kolkata FIR on a 24 hour basis. At the Chennai ACC, ADS and CPDC was available for the Chennai FIR from the Chennai Oceanic Control Centre and was operating for a limited period, 0230 to 2030 UTC, covering the westbound peak traffic flow. It was expected that this would be extended to cover a 24 hours period in the near term and would be notified by NOTAM. The control authority for the Chennai The meeting noted that the operational trial of ADS and CPDLC for the Bay of Bengal area was being set up by the FANS Implementation Team (FIT) for the Bay of Bengal area and was expected to commence in March 2004. IATA further requested that States consider extending the use of ADS/CPDLC to the Mumbai and Jakarta FIRs. India indicated that CPDLC should also be extended to the Arabian Sea region.

3.4 Indonesia informed the meeting of the implementation EMARSSH Phase II in the Jakarta FIR. It was pointed out that N563 was restricted across Indian airspace to the nighttime period and India was requested to consider H24 operations, which would provide greater benefits to operators. IATA supported this request and urged India to lift the restriction. This route was a primary route to the Middle East and important for the Haj traffic. India advised that the restricted use of N563 was necessary as the route entered a military restricted area operational during the day time hours. India noted the request of the meeting but was not confident that any further concessions from the military for the extended use of N563 could be gained in the short term. Indonesia also drew attention to the need to establish direct speech circuits between Medan and Chennai ACCs and this matter would be pursued with India.

3.5 Malaysia informed the meeting of the need to harmonize the application of the Mach number technique (MNT) to apply 10 minute longitudinal separation across the Bay of Bengal in respect to the faster aircraft following. The procedures for applying this separation were contained in the ICAO ATS Planning Manual (Doc 9426), and Malaysia was of the view that they should be contained in the PANS-ATM (Doc 4444) which would facilitate States introducing the procedures. The meeting noted that application of the faster aircraft following MNT was being applied worldwide and fully endorsed by ICAO. States had been informed by State letter issued by the ICAO Asia/Pacific Regional Office in 1997 on the implementation of this procedure. The meeting agreed that to enhance airspace capacity and efficiency of ATC operations, a uniform application of the MNT should be applied by States for the Bay of Bengal area. In this regard, States should update their LOAs to include the faster aircraft following MNT procedure. To assist States to prepare their LOA, the meeting prepared a list of entry/exit points on the Bay of Bengal routes where the procedure should be applied as follows:

L515/M770 PUT – KAKID (1024 NM)
L759 PUT – BBS (1039 NM)
P628 GIVAL – LARIK (1048 NM)
L301 TANEK – BBS (999 NM)

India agreed to study the proposals put forward by Malaysia on the faster aircraft following MNT and entry exit points considering the actual traffic scenario. Material for inclusion in a LOA for the MNT for faster aircraft following is provided in **Appendix D**.

3.6 The meeting was also informed of discussions at the SCM/RVSM/IND-PAK meeting concerning application of fixed Mach number M0.84 on L759. This was part of the ATFMP measures being introduced to improve the departure delays being experienced at the Southeast Asia airports. The procedure calls for operators intending to flight plan on the route, to be capable of operating aircraft at M0.84 at or above FL280. It had been noted that some aircraft types, notably the B777, M0.84 would be an inappropriate speed to fly. A way to overcome the problem would be to refer to indicated air speed (IAS). However, this was a global issue requiring ICAO to review the matter. Accordingly, ICAO would be informed of the issues

involved, and also it would be referred to the BBACG/14 and RVSM/TF 90-day Review meetings.

Agenda Item 4: Future Enhancements

4.1 The meeting recognized that the EMARSSH route structure would continue to require refinements and modifications to route alignment, and introduction of additional routes. The operation of ultra-long haul flights by aircraft such as the Airbus 340-600, and Boeing 777ER may require new routes for city pairs as services were introduced. With the ongoing CNS/ATM implementation developments in the Asia/Pacific Region, ATS service providers and users would continue to see improved capabilities. This would support further reduction in separation minima, such as 30 NM and enhancement to operating efficiencies and safety. Future route development and airspace changes in the region would be kept under review by APANPIRG, the Route Review Task Force and various ATS coordination groups.

Agenda Item 5: Future Action

5.1 In completing the one year review of the EMARSSH project, the meeting was satisfied that outstanding issues had been identified and all appropriate follow-up action taken. The meeting was therefore of the view, that the EMARSSH Task Force could be disbanded with any further work to be assigned by APANPIRG to the Route Review Task Force or as appropriate to other groups. Accordingly, the meeting requested the Secretariat to bring to the attention of the APANPIRG/15 meeting in August 2004 the outcome of this meeting.

Agenda Item 6: Other business

6.1 At the request of the Chairman, the meeting was invited to share their experiences on the lessons learnt and benefits derived from the planning and implementation process of the EMARSSH project that could be of value for other similar activities. The meeting highlighted the following matters:

- using a small core team of experts to manage the project provided continuity, impetus and centralized project management, and this arrangement was highly recommended for projects of this size;

- AIS was an integral and essential element of a modern ATM system and as such the composition of future core teams should include an AIS expert;

- in planning airspace arrangements, careful attention needed to be given to operational end use ensuring that the airspace structure met operational requirements. Also, users should take full advantage of all routing options available;

- unexpected international events could seriously impair the effectiveness of route operations and attention needed to be given to contingency arrangements;

- data collection and management assigned to a single management source;

- project timing kept to a minimum and careful attention given to meeting timelines;

- identify and establish Regional Monitoring Agency (RMA) services early in the process;

- cooperation and coordination from military authorities was essential. They must be involved early in the process and well informed on the objectives of the project;

- whilst meeting requirements for international operators, domestic operations must be fully considered and measures put in place to ensure minimum disruption to their operations;

- with complex airspace changes, information on developments must be kept in the public forum to ensure all operators remain up-to-date on the changes to be implemented and the operational requirements;

- planning should be forward looking and cognizant of the potentially rapidly changing technological advances in aircraft operations and commercial imperatives;

- close coordination with adjacent regions to harmonize procedures and planning objectives;

- information flow from the planning process should be broadly available and especially at the operational level;

- early provision for training requirements must be thoroughly developed and timely delivered;

- awareness of and coordination on other related changes being planned or implemented by other groups, and to continually update the ICAO Regional Office on progress especially on early advice of potential difficulties; and

- the plan must be well defined, meet user requirements, be realistic, achievable in a timely manner and supported by all parties.

6.2 States and international organizations were unanimous in crediting EMARSSH with a achieving its core objective to restructure the routings of the major traffic flows whilst realizing cost effective benefits for the airspace user community and service providers. In addition to the efficiencies of the new route structure, capacity was further enhanced by the simultaneous implementation of RNP 10 in oceanic areas, along with RVSM implementation, which together maximized overall benefits. IFATCA expressed its appreciation that the EMARSSH route restructuring not only delivered tremendous benefits for airlines but also for controllers. IFATCA further recognized the cooperation and willingness of States in supporting the project.

7. Date and venue of next meeting

7.1 The meeting having agreed that the EMARSSH Task Force work programme had been completed, there would be no further meetings proposed.

8 Closing the meeting

8.1 The Chairman in closing the meeting, thanked the Asia/Pacific Regional Office for the arrangements and support provided which greatly contributed to the success of the meeting. As this was the last meeting to be held in this conference room, he expressed appreciation for the years of significant contribution States and organizations have made in this venue to international civil aviation int the Asia and Pacific Region. Mr. Rigney looked forward to the new conference facility which was a fitting environment provided by Thailand in which to further progress civil aviation matters in the 21st century. He thanked participants and their Administrations for the excellent support and expertise provided to the EMARSSH Task

Force that led to the outstanding successful implementation and operation of one of the most significant airspace restructuring of our times. In particular, he recognized the special contribution of the past EMARSSH Chairman and core team members.

……

LIST OF PARTICIPANTS

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
AUSTRALIA		
Mr. Ron Rigney	Operations Manager Airservices Australia Locked Bag 747 Eagle Farm QLD 4009 Australia	Tel: 61-7-3866 3487 Fax: 61-7-3866 3599 E-mail: ron.rigney@airservicesaustralia.com
BANGLADESH		
Mr. Mohammed Ali Reza Khan	Director (ATS & AERO) Civil Aviation Authority of Bangladesh Headquarters Office Kurmitola, Dhaka 1229 Bangladesh	Tel: 880-2-8911125 Fax: 880-2-8913322 E-mail: arkhan@agni.com
Mr. Rabindra Kumar Das	Assistant Director (ATS) Civil Aviation Authority of Bangladesh Headquarters Office Kurmitola, Dhaka 1229 Bangladesh	Tel: 880-2-8914870-74 ext 3488 Fax: 880-2-8913322
INDIA		
Mr. Asha Ram	GM (ATM Airports Authority of India NATS Complex T-II IGI Airport New Delhi, India	Tel: 91-11-25654367 Fax: 91-11-25654367
Mr. K.S. Raghuraman	Deputy General Manager (ATM) Airports Authority of India Rajiv Gandhi Bhavan Safdarjung Airport New Delhi 110003, India	Tel: 91-11-24610577 E-mail: ksraghu61@hotmail.com

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
Mr. Chandan Sen	Deputy General Manager (ATC) Airports Authority of India NSCBI Airport Kolkata-700028 India	Tel: 91-11-2511 9520 Res: 91-11-2579 7743 Fax: 91-11-2513 0134 E-mail: chandansen4@rediffmail.com
Mr. Israel Sylvester	Deputy General Manager (ATC) Airports Authority of India Air Traffic Services Complex (E-7, NAD Quarters)-Res Meenambakram Chennai 600027 India	Tel: 91-44-2256 1365 – 2234 5021 Fax: 91-44-2256 1365 E-mail: dgmaats_aai@vsnl.net
INDONESIA		
Mr. Nanang Swastya Taruf	Deputy Director of System & Procedure Air Navigation Directorate of Aviation Safety, DGAC Jl. Medan Merdeka Barat no. 8, fl-23rd Jakarta Pusat Indonesia 10120	Tel: +62-21-3506451 Fax: +62-21-3507569 E-mail: cns_atm@telkom.net cnsatm@ekilat.com
Mr. Surachman	Assistant ATS PT (Persero) Angkasa Pura I (ATS Provider) Kota Baru Bandar Kemayoran Blok B 12 Kav No. 2, Jakarta 10610 Indonesia	Tel: +62-21-654 1642 E-mail: opsllu@angkasapura.ic.id
Mr. Novaro Martodihardjo	Assistant Director ATS PT. Angkasa Pura II Gedung 600 Soekarno-Hatta Airport Jakarta, Indonesia	Tel: 62-21-5506148 Fax: 62-21-5506106 E-mail: novaro.m@angkasapura2.co.id novaro95@indo.net.id

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
LAO PDR		
Mr. Phouthone Phrakaysone	Deputy Director of Air Navigation Division Department of Civil Aviation P.O.Box 119, Luang Phabang Road Vientiane International Airport Lao PDR	Tel: (856-21) 512164 Fax: (856-21) 512164 E-mail: landea@laotel.com
MALAYSIA		
Mr. Maniam Appadurai	Deputy Director Air Traffic Services Division Department of Civil Aviation Block 'A' Air Traffic Services Complex Sultan Abdul Aziz Shah Airport 47200 Subang Selangor, Malaysia	Tel: (603) 78465233 ext 435 Fax: (603) 78472997 E-mail: accwmfc@tm.net.my
NEPAL		
Mr. Rajesh Raj Dali	Deputy Director General Civil Aviation Authority of Nepal Head Office P.O. Box 12646 Babar Mahal Kathmandu, Nepal	Tel: 977-1-4262532 Fax: 977-1-4262324 E-mail: caanais@ntc.net.np Internet: www.caannepal.org.np
Mr. Mahesh Kumar Basnet	Chief Officer (ATS) Civil Aviation Authority of Nepal Head Office Babar Mahal Kathmandu, Nepal	Tel: 977-1-42615243, 4262387 Fax: 977-1-4262516 E-mail: caan@cnsatm.wlink.com.np

PAKISTAN		
Mr. Jahangir Khan	Director Operations OPS Directorate Civil Aviation Authority, Headquarters Terminal - 1 Jinnah International Airport Karachi Post Code 75200 Pakistan	Tel: 92 21 924 8745 Fax: 92 21 924 8744 E-mail: imb4u@cyber.net.pk Mjkhan0047@hoymail.com
SINGAPORE		
Mr. Kuah Kong Beng	Senior ATC Manager (Airspace) Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: 65-6541-2457 Fax: 65-6545-6516 E-mail: kua_.kong_beng@caas.gov.sg
SRI LANKA		
Mr. Chitral Mahesh De Silva	Deputy Chief Air Traffic Controller Airport and Aviation Services (Sri Lanka) Ltd Navigation Services Complex Bandaranaike International Airport Katunayake Sri Lanka	Tel: 94-11-225 2062 Fax: 94-11-225 2062 E-mail: mahesh@airport.lk
Mr. Ajith Nandana Wickramarachchi	Air Traffic Controller Airport and Aviation Services (Sri Lanka) Ltd Navigation Services Complex Bandaranaike International Airport Katunayake Sri Lanka	Tel: 94-11-263 5106 Fax: 94-11-263 5105 E-mail: wickram1@yahoo.com

THAILAND		
Mr. Weerawath Thaitakul	Chief of Air Traffic Control Branch Airport Standards and Air Navigation Facilitating Division Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Bangkok 10120, Thailand	Tel: 66-2-286 8159 Fax: 66-2-286 8159
Mr. Kamol Pulperm	Senior Air Transport Technical Officer Airport Standards and Air Navigation Facilitating Division Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Bangkok 10120, Thailand	Tel: 66-2-2868159 Fax: 66-2-2868159
Mr. Surath Sridech	ATC Expert Department of Aviation 71 Soi Ngarmduplee, Rama IV Road Bangkok 10120, Thailand	Tel: 66-2-2822909/05-0561575 Fax: 66-2-2868159 E-mail:
Mr. Aphinun Vannangkura	Director Area Control Centre Bangkok Area Control Centre Aeronautical Radio of Thailand Ltd. 102 Ngarmduplee, Tungmahamek Sathorn, Bangkok 10120 Thailand	Tel: 66-2-285 9386 Fax: 66-2-285 9489 E-mail: aphinun@aerothai.co.th
Mr. Tinnagorn Choowong	Air Traffic Control Manager Bangkok Area Control Centre Aeronautical Radio of Thailand Ltd. 102 Ngarmduplee, Tungmahamek Sathorn, Bangkok 10120 Thailand	Tel: 66-2-285 9386 Fax: 66-2-285 9489 E-mail: tinnagorn.ch@aerothai.or.th

Capt. Werasak Wiroonpetch	Manager, International Aviation Affairs and Development Department Operations Support Department Thai Airways International (Public) Co., Ltd 89 Vibhavadi Rangsit Rd Bangkok 10900, Thailand	Tel: 66-2-545 2665, 66-2-545-2666 Fax: 66-2-545 3849 E-mail: werasak.w@thaiairways.co.th
IATA		
Mr. Soon Boon Hai	Assistant Director Infrastructure – Asia/Pacific International Air Transport Association 77 Robinson Road #05-00, SIA Building Singapore 068896	Tel: 65-6239 7267 Fax: 65-6536 6267 E-mail: soonbh@iata.org
Capt. Aric Oh	Management Pilot (Special Duties) Technical Singapore Airlines SIA Training Centre 04-C 720 Upper Changi Road East Singapore 486852	Tel: +65-6540 3694 Fax: +65-6285 8687 E-mail: aric_oh@singaporeair.com.sg ciraho@pacific.net.sg
Mr. Owen B. Dell	Manager International Operations Cathay Pacific Airways Limited 9/F Central Tower, Cathay Pacific City 8 Scenic Road Hong Kong International Airport Lantau, Hong Kong, China	Tel: 852 2747 8829 Fax: 852 2141 8829 SITA: HKGVLCX E-mail: owen_dell@cathaypacific.com
Mr. Walter Dollman	Manager, Regulartory & Industry Affairs Qantas Airways 203 Coward Street Mascot 2020 Australia	Tel: 61-2-9691 1195 Fax: 61-2-9691 1605 E-mail: wdollman@qantas.com.au

IFATCA		
Mr. Neil Vidler	IFATCA Technical Representative 1 Highbridge Road Killara NSW 2071 Australia	Tel: 61-2-9499 7635 Fax: 61-2-9499 7705 E-mail: rnvidler@smartchat.net.au
ICAO		
Mr. David J. Moores	Regional Officer, ATM ICAO Asia & Pacific Office P.O.Box 11 Samyaek Ladprao Bangkok – 10901 Thailand	Tel: 66-2-5378189 Fax: 66-2-5378199 E-mail: dmoores@bangkok.icao.int

- - - - - - - - - - - - - - - -

LIST OF WORKING PAPERS (WPS) and INFORMATION PAPERS (IPS)

WORKING PAPERS

WP No.	Agenda Item	Presented by	Subject
1	-	Secretariat	Provisional Agenda
2	3	Secretariat	Air Traffic Flow Management Plan and Traffic Orientation Scheme for the westbound traffic flow across the Bay of Bengal to Afghanistan
3	2	Secretariat	Improvement to the EMARSSH route structure
4	5	Secretariat	Review of EMARSSH PIRM Action Plan
5	2	Nepal	EMARSSH Route and Nepal's Initiative
6	3	IATA	One Year Review of the EMARSSH Plan
7	3	Malaysia	Application of Mach Number Technique when the following aircraft is the faster

INFORMATION PAPERS

IP No.	Agenda Items	Presented by	Subject
1	3	Indonesia	EMARSSH Implementation (Bob Area) in Jakarta FIR

- - - - - - - - - - - - - - - -

HIMALAYA 1

(KOLKATA TO INDEK)

SIGNIFICANT POINT	COORDINATE	TRACK (M)	DISTANCE (NM)
CALCUTTA	N2238.7 E08827.2	313	489
NEPALGUNJ	N2806.1 E08139.1	305	516
INDEK	N3246 E7316		1005

HIMALAYA 2

(KATHMANDU TO KUNMING)

SIGNIFICANT POINT	COORDINATE	TRACK (M)	DISTANCE (NM)
KATHMANDU (KTM)	N2740.5 E08521.0	110	170
BAGHDOGRA (BBD)	N2641.3 E08819.8	101	179
GUWAHATI (GGT)	N2606.1 E09135.3	134	104
SILCHAR (KKU)	N2454.8 E09258.9	101	51
IMPHAL (IIL)	N2446.0 E09354.5	087	481
KUNMING (KMG)	N2501 E10244	-	985

	ROUTE	DISTANCE (NM)
A.	KATHMANDU-DHAKA-LASIO-KUNMING-HONGKONG	1770
B.	KATHMANDU-BAGHDOGRA-IMPHAL-LASIO-KUNMING-HONGKON	1725
C.	KATHMANDU-BAGHDOGRA-IMPHAL-KUNMING-HONGKONG	1669

HIMALAYA 3

(KATHMANDU TO DELHI)

SIGNIFICANT POINT	COORDINATE	TRACK (M)	DISTANCE (NM)
KATHMANDU (KTM)	N2740.5 E08521.0	278	197
NEPALGUNJ (NGJ)	N2806.3 E08140	278	243
DELHI (DPN)	N2834 E7706.3	-	440

	ROUTE	DISTANCE (NM)
A.	KATHMANDU-NEPALGUNJ-DELHI	440
B.	KATHMANDU-BHAIRAHAWA-DELHI	480

MATERIAL ON MACH NUMBER TECHNIQUE FOR FASTER AIRCRAFT FOLLOWING FOR INCLUSION IN A LETTER OF AGREEMENT

IV SEPARATION

4.2 Longitudinal separation

During the transfer of control, the minimum non-radar longitudinal separation to be used between aircraft assigned the same altitude along ATS/RNP10 routes and operating routes between A and B FIR shall be:

1. **ten (10) minutes** continuous or increasing on all ATS/RNAV routes,
2. **five (5) minutes** or more when Mach Number Technique (MNT) is being applied base on MNT table, or
3. **80 NM RNAV** between RNP10 aircrafts along the RNP10 routes.

4.6 Mach Number Technique (MNT) Conditions

In accordance with ICAO Regional Supplementary Procedures (Doc 7030), MNT may be used on all routes provided the aircraft:

a) is equipped with approved RNAV equipment and the flight crew trained;

b) is instructed to maintain the appropriate Mach Number, between entry and exit point in en-route phase of flight; and

c) has reported over a common point and follow the same or continuously diverging tracks.

The table in 4.7 details the minimum interval required between aircraft at the entry point. It includes guidance for the application of MNT when the succeeding aircraft is faster.

4.7 MNT – Time Separation Minima

Mach number difference between aircraft	Time Interval required between aircraft at transfer of control point (TCP)
M0.06 **preceding** aircraft faster	5
M0.05 preceding aircraft faster	6
M0.04 preceding aircraft faster	7
M0.03 preceding aircraft faster	8
M0.02 preceding aircraft faster	9
Same Mach No.	10
M.01 **succeeding** aircraft faster	12
M.02 succeeding aircraft faster	14
M.03 succeeding aircraft faster	16
M.04 succeeding aircraft faster	18

M.05 succeeding aircraft faster	20	
M.06 succeeding aircraft faster	22	

4.8
MNT Entry/Exit Point

MNT may be applied to the portion of flight specified on the following routes segment:

ATS/RNP10 Route	Entry Point	Exit Point

When Mach Number Technique is applied, the assigned Mach Number shall be included in the transfer of control co-ordination.

? END?